

NEW HANOVER COUNTY DRINKING WATER

ISSUE:

- A recent study found the chemical GenX in North Carolina's Cape Fear watershed.
- EPA is providing assistance to the state to determine appropriate next steps.
- On June 16, 2016, the Cape Fear Public Utility Authority issued resolutions asking the state of NC and EPA to modify NPDES permits, to review studies and develop health assessments and examine compliance.

KEY BACKGROUND:

- Per- and polyfluoroalkylated substances (PFAS) are a family of man-made chemicals that include perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), are persistent in the environment, and are distributed globally. PFAS chemicals have been detected at sites across the country, including in drinking water.
- In 2016, EPA established non-regulatory health advisories for PFOA and PFOS in drinking water of 70 parts per trillion. At this concentration, adverse health effects are not anticipated to occur over a lifetime of exposure.
- Certain PFAS chemicals, including PFOA and PFOS, are no longer manufactured in the U.S. as a result of voluntary phase-outs and EPA's 2010/2015 PFOA Stewardship Program. GenX is a chemical designed as a replacement for PFOA/PFOS.
- GenX is produced by Chemours, a fluorochemical manufacturer spin-off of DuPont.
- In 2009, EPA and DuPont entered into a consent order that required DuPont to recover, capture or recycle GenX from air emissions and water discharges at the company's facilities in the United States at a rate of 99 percent. In its premanufacture approval, EPA determined that GenX could go to market per the conditions of the consent order.
- In the recent study, researchers sampled the raw source water of 3 drinking water treatment plants in 2013.
 - GenX was detected in one of the three treatment plants at an average concentration of 631 parts per trillion.
 - In 2014, additional sampling at this plant, detected GenX at various points along the treatment train and in the finished water.
- Under the Safe Drinking Water Act, EPA undertakes extensive evaluations of contaminants and uses the best available peer reviewed science to identify and regulate contaminants of that present meaningful opportunities for health risk reduction.
 - EPA has not established a drinking water regulation, health advisory or health based benchmark for GenX in drinking water because of the limited data on health effects and occurrence in drinking water.

NEXT STEPS:

- The NC Department of Environmental Quality, in consultation with the NC state Department of Health and Human Services, is working with the manufacturer to conduct water sampling to investigate the presence of GenX in the Cape Fear River and to reduce or eliminate the discharge of the chemical to the river.

- EPA is evaluating the availability of data to better understand the toxicity of GenX.
- EPA will work closely with the state and public water systems to determine the appropriate next steps to ensure public health protection.

MEDIA COVERAGE:

[[HYPERLINK "https://theintercept.com/2017/06/17/new-teflon-toxin-found-in-north-carolina-drinking-water/"](https://theintercept.com/2017/06/17/new-teflon-toxin-found-in-north-carolina-drinking-water/)]

New Teflon Toxin Found in North Carolina Drinking Water

[[HYPERLINK "/staff/sharon-lerner/"](/staff/sharon-lerner/)]

June 17 2017, 8:16 a.m.

A persistent and toxic industrial chemical known as GenX has been detected in the drinking water in Wilmington, North Carolina, and in surface waters in Ohio and West Virginia.

DuPont introduced GenX in 2009 to replace [[HYPERLINK "https://theintercept.com/2015/08/11/dupont-chemistry-deception/"](https://theintercept.com/2015/08/11/dupont-chemistry-deception/)], a compound it used to manufacture Teflon and coatings for stain-resistant carpeting, waterproof clothing, and many other consumer products. PFOA, also known as C8, was phased out after DuPont was hit with a class-action [[HYPERLINK "https://theintercept.com/2015/08/17/teflon-toxin-case-against-dupont/"](https://theintercept.com/2015/08/17/teflon-toxin-case-against-dupont/)] over health and environmental concerns. Yet as The Intercept [[HYPERLINK "https://theintercept.com/2016/03/03/how-dupont-concealed-the-dangers-of-the-new-teflon-toxin/"](https://theintercept.com/2016/03/03/how-dupont-concealed-the-dangers-of-the-new-teflon-toxin/)] last year, GenX is associated with some of the same [[HYPERLINK "https://theintercept.com/2016/03/03/new-teflon-toxin-causes-cancer-in-lab-animals/"](https://theintercept.com/2016/03/03/new-teflon-toxin-causes-cancer-in-lab-animals/)] as [[HYPERLINK "http://www.c8sciencepanel.org/"](http://www.c8sciencepanel.org/)], including cancer and reproductive issues.

Levels of GenX in the drinking water of one North Carolina water utility, the Cape Fear Public Utility Authority, averaged 631 ppt (parts per trillion), according to a [[HYPERLINK "https://www.researchgate.net/publication/309887015_Legacy_and_Emerging_Perfluoroalkyl_Substances_Are_Important_Drinking_Water_Contaminants_in_the_Cape_Fear_River_Watershed_of_North_Carolina"](https://www.researchgate.net/publication/309887015_Legacy_and_Emerging_Perfluoroalkyl_Substances_Are_Important_Drinking_Water_Contaminants_in_the_Cape_Fear_River_Watershed_of_North_Carolina)] published in Environmental Science & Technology Letters in 2016. Although researchers didn't test the water of two other drinking water providers that also draw water from that area of the Cape Fear River, the entire watershed downstream of the Chemours discharge, which is a source of drinking water for some 250,000 people, is likely to be contaminated, according to Detlef Knappe, one of the authors of the study.

Research presented at a [[HYPERLINK](#)

["https://www.northeastern.edu/environmentalhealth/highly-fluorinated-compounds-social-and-scientific-discovery/"](https://www.northeastern.edu/environmentalhealth/highly-fluorinated-compounds-social-and-scientific-discovery/)] this week at Northeastern University detailed the presence of GenX in water in North Carolina and Ohio. In both cases, the chemical was found in water near plants that were owned by DuPont and since 2015 have been operated by DuPont's spinoff company, Chemours. Both GenX and PFOA belong to a larger group of chemicals known as PFAS, which are structurally similar and believed to persist indefinitely in nature.

In Ohio, Jason Galloway, a university student who presented at the conference, measured the chemical in surface water as far as 20 miles from the Chemours plant, which is across the Ohio River in Parkersburg, West Virginia. After reading about the chemical in [[HYPERLINK](#) ["https://theintercept.com/series/the-teflon-toxin/"](https://theintercept.com/series/the-teflon-toxin/)], Galloway sampled water near the plant and tested it for GenX. Galloway found the chemical in various creeks and streams in the area at levels reaching more than 100 ppt. He explained that some of the chemical was likely deposited far from the plant by wind.

In North Carolina, GenX was present in water at even higher levels, with the most concentrated sample measuring 4,500 ppt. Although the EPA has not set legally binding regulations on any member of this class of chemicals, the agency last year set a [[HYPERLINK](#) ["https://theintercept.com/2016/05/19/with-new-pfoa-drinking-water-advisory-dozens-of-communities-suddenly-have-dangerous-water/"](https://theintercept.com/2016/05/19/with-new-pfoa-drinking-water-advisory-dozens-of-communities-suddenly-have-dangerous-water/)] for PFOA and the related chemical PFOS of 70 ppt. Several states have also set their own drinking levels for PFOA. [[HYPERLINK](#) [\ "stream/0"](http://digital.vpr.net/post/vermont-sets-permanent-drinking-water-standard-pfoa)] has set the lowest so far at 20 ppt, and water experts in [[HYPERLINK](#) ["http://www.nj.gov/dep/watersupply/pdf/pfoa-recommend.pdf"](http://www.nj.gov/dep/watersupply/pdf/pfoa-recommend.pdf)] have proposed an even lower level, 14 ppt, though it has not yet been finalized.

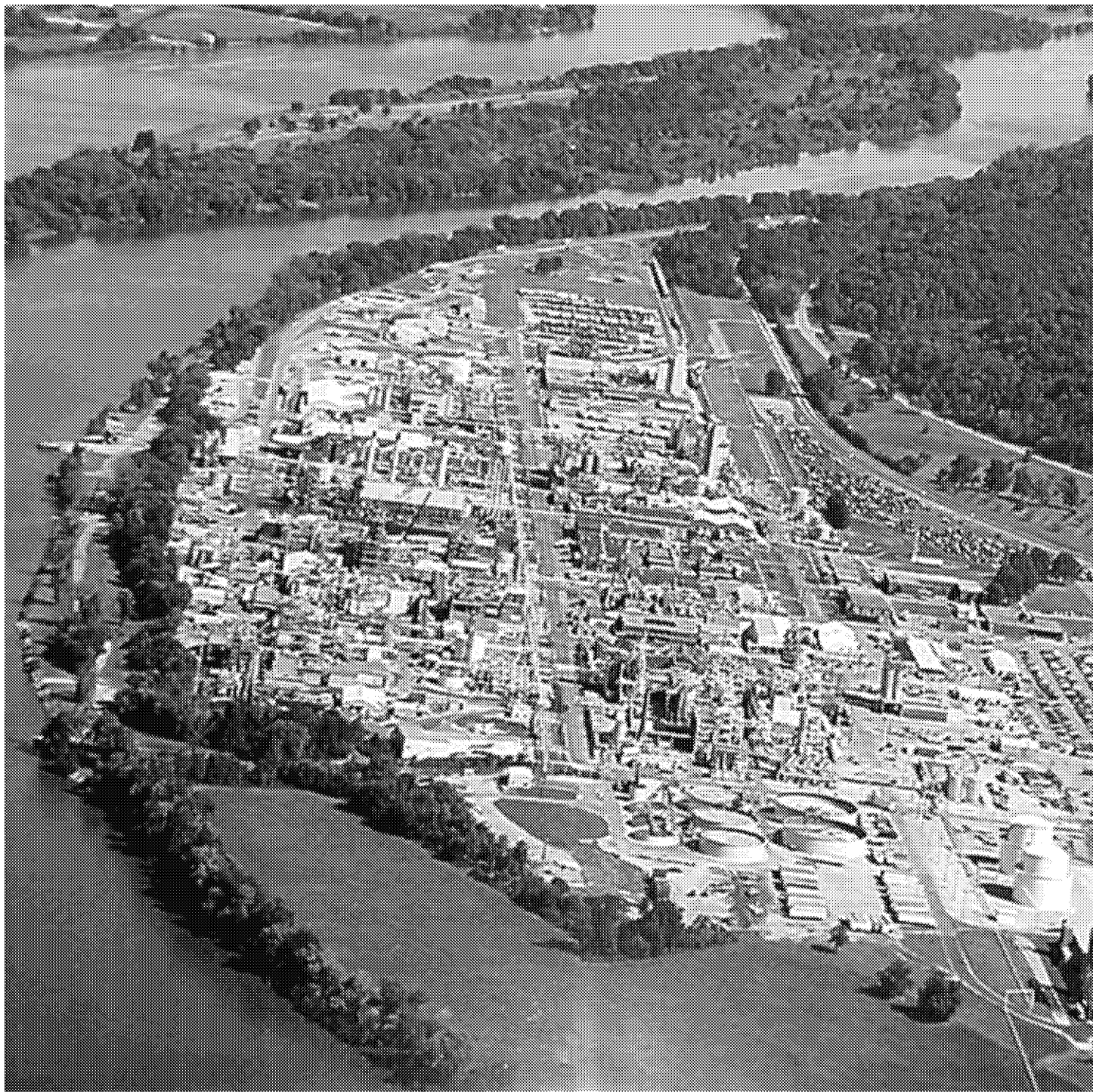
In response to an inquiry from the Intercept, the EPA provided a written response:

EPA is committed to protecting public health and supporting states and public water systems as the appropriate steps to address the presence of GenX in drinking water are determined. Under the Safe Drinking Water Act, EPA undertakes extensive evaluations of contaminants and uses the best available peer reviewed science to identify and regulate contaminants that present meaningful opportunities for health risk reduction. While EPA has not established a drinking water regulation, health advisory or health based benchmark for GenX in drinking

water, the agency is working closely with the states and public water systems to determine the appropriate next steps to ensure public health protection.

In 2007, as it was phasing out the use of PFOA, DuPont applied to the West Virginia Department of Environmental Protection to update its emissions permit. A resulting 2011 [[HYPERLINK "https://www.documentcloud.org/documents/3867066-DuPont-West-Virginia-Consent-Order-for-GenX.html"](https://www.documentcloud.org/documents/3867066-DuPont-West-Virginia-Consent-Order-for-GenX.html)] between the company and the state agency allowed the company to emit wastewater containing as much as 17,500 ppt of GenX into a receiving stream near the plant, an amount that is 250 times the EPA drinking water standard for PFOA and PFOS.

On stationery bearing the tagline “promoting a healthy environment,” the West Virginia document lays out the terms of the permit allowing DuPont to discharge its waste into the Ohio River and its tributaries. In the agreement, DuPont promised to implement a variety of “environmental control technologies that reduce environmental release and exposure.” A 2009 [[HYPERLINK "https://www.documentcloud.org/documents/2746607-Sanitized-Consent-Order-P08-0508-and-P08-0509.html"](https://www.documentcloud.org/documents/2746607-Sanitized-Consent-Order-P08-0508-and-P08-0509.html)] between DuPont and the EPA, which The Intercept obtained through the Freedom of Information Act, shows that the company agreed to recover or destroy 99 percent of the GenX it produces.



The Chemours (formerly DuPont) Washington Works plant along the Ohio River in Parkersburg, W. Va. in an undated file photo.

Photo: The Marietta Times/AP

It is unclear whether Chemours has kept DuPont's promise to discharge just one percent of its GenX waste, in part because DuPont declared the amount it intended to produce confidential in the consent order. A spokesperson for DuPont referred questions to Chemours, saying "that whole thing has been transferred to them." Chemours did not respond to inquiries for this article about how much GenX it produces and discharges into waters near its plants.

In an email, a spokesperson for the West Virginia Department of Environmental Protection, Jacob Glance, wrote that DuPont and Chemours have been submitting monitoring reports in accordance with their permit, but that the agency does not monitor the water for the presence of GenX.

In the West Virginia consent order, DuPont described GenX as having "a favorable toxicological profile" — a phrase Chemours has also used in its [[HYPERLINK "https://www.chemours.com/Industrial_Bakery_Solutions/en_GB/sustainability/dibs_genx.html"](https://www.chemours.com/Industrial_Bakery_Solutions/en_GB/sustainability/dibs_genx.html)]. But DuPont's own research calls that characterization into question. The company submitted 16 reports of adverse incidents related to GenX between 2006 and 2013, describing experiments in which lab animals exposed to the chemical developed cancers of the liver, pancreas, and testicles as well as benign tumors. The industry research also tied GenX to reproductive problems, including low-birth weight and shortened pregnancies in rats, and changes in immune responses.

On Monday, in response to [[HYPERLINK "http://www.starnewsonline.com/news/20170607/toxin-taints-cfpua-drinking-water/1"](http://www.starnewsonline.com/news/20170607/toxin-taints-cfpua-drinking-water/1)] about the presence of GenX in Wilmington's drinking water, North Carolina public health officials issued a [[HYPERLINK "http://news.nhcgov.com/wp-content/uploads/2017/06/GenX-Health-Effects-Summary-DHHS-6_12_17-PDF.pdf"](http://news.nhcgov.com/wp-content/uploads/2017/06/GenX-Health-Effects-Summary-DHHS-6_12_17-PDF.pdf)] assuring that "the GenX levels detected in 2013-2014 would be expected to pose a low risk to human health." The statement mentioned a European study that had a high threshold of safety — 70,909 ppt — but didn't provide a citation for it. Meanwhile, a recent [[HYPERLINK "http://www.rivm.nl/Documenten_en_publicaties/Wetenschappelijk/Rapporten/2016/december/Evaluation_of_substances_used_in_the_GenX_technology_by_Chemours_Dordrecht"](http://www.rivm.nl/Documenten_en_publicaties/Wetenschappelijk/Rapporten/2016/december/Evaluation_of_substances_used_in_the_GenX_technology_by_Chemours_Dordrecht)] found that the adverse effects of GenX are similar to those of PFOA. And a [[HYPERLINK "http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1085404&dswid=7661"](http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1085404&dswid=7661)] from a respected group of researchers in Sweden found GenX to be more toxic than PFOA.

Both Chemours and DuPont have also emphasized that GenX exits the human body more quickly than PFOA. But at the recent conference, Linda Birnbaum, director of the National Institute of Environmental Health Sciences, downplayed the significance of that difference. “Every PFAS that has been studied is causing problems,” said Birnbaum, whose agency funds scientific research into the chemicals. “Even if they have a shorter half-life, if it has a half-life of 30 days, it’s going to build up in your body.”

Given the conflicting information, Knappe, co-author of the study about drinking water in North Carolina, felt the state agency shouldn’t have suggested that extremely high levels of GenX are safe to ingest. “I really have heartburn over the 71,000 number,” said Knappe, a professor of environmental engineering at North Carolina State University. “It’s irresponsible to put that kind of number out and pretend that we can tell people that the water is safe at those levels.”

Many people in the area are also worried — and confused — about the contamination. Since she heard about the GenX in her drinking water, Deborah Buchanan has been wondering whether it might help explain why she developed thyroid cancer and thyroid disease in 2015. Although there is no research available on how GenX affects the human thyroid gland, a quick Google search showed Buchanan, who lives in Leland, North Carolina, that PFOA was linked with the disease. “I’m not sure that’s how I got sick,” said Buchanan, “but it does make me wonder.”

Parents in the area are particularly worried. As soon as the news was out, “all the cancer moms in our group started posting on Facebook,” said Amy Hermann, who organized local parents of children with cancer after her son developed leukemia in 2012. “My first thought was: what did we expose him to that might have started his cancer?” said Hermann. “My second thought was: We have three other kids. How do we protect them?”

Fifty families belong to Hermann’s group, the Wilmington Childhood Cancer Support Group, including families of several children with leukemia and three with a rare form of kidney cancer. PFOA has been linked to [[HYPERLINK](http://www.c8sciencepanel.org/pdfs/Probable_Link_C8_Cancer_16April2012_v2.pdf)

"http://www.c8sciencepanel.org/pdfs/Probable_Link_C8_Cancer_16April2012_v2.pdf] in humans, though there are no published studies on the links between GenX and kidney cancer in humans. Besides the industry studies, which were accessed on the EPA website using information that had originally been classified as “confidential business information,” there is very little research available on the health effects of GenX.

Even less is known about other chemicals the researchers found in the Cape Fear River. In addition to GenX, the scientists detected six other PFAS compounds in the river water, some at

levels 100 times that of GenX. In all, experts estimate there may be between 3,000 and 6,000 different PFAS compounds.

“It just blows my mind to see the number and diversity of different compounds that are out there,” Andrew Lindstrom, a research scientist at EPA’s National Exposure Research Laboratory and co-author of the North Carolina study, told the audience at the conference. “You have to ask yourself: how good is the drinking water treatment plant that is downstream? And very often then answer is not very good.”

Indeed, even the advanced water processing system used by the Cape Fear Public Utility Authority, which provided the water in the North Carolina study, was unable to keep the chemicals out. “We’d expect that it’d be very effective with a wide range of contaminants,” said Knappe, “but these compounds zipped through the plant untouched.”

Because the chemicals aren’t regulated, states and water providers are under little or no legal obligation to test for or remove them. And frustrated residents of [[HYPERLINK "https://theintercept.com/wp-admin/@nywaterproject"](https://theintercept.com/wp-admin/@nywaterproject)], New York, [[HYPERLINK "https://www.facebook.com/groups/228102437212962/"](https://www.facebook.com/groups/228102437212962/)], Pennsylvania, [[HYPERLINK "http://www.testingforpease.com/"](http://www.testingforpease.com/)], New Hampshire, and [[HYPERLINK "http://veteransandcivilianscleanwateralliance.org/"](http://veteransandcivilianscleanwateralliance.org/)], Michigan, among other communities with PFAS-contaminated water, have been taking matters into their own hands, organizing local protests, calling legislators, and putting pressure on polluters. In Wilmington, [[HYPERLINK "https://www.facebook.com/groups/1698237630205667/"](https://www.facebook.com/groups/1698237630205667/)] [[HYPERLINK "https://www.facebook.com/ToxinFreeCapeFear/"](https://www.facebook.com/ToxinFreeCapeFear/)] have already sprung up to fight GenX. And the law firm Levin Papantonio has [[HYPERLINK "https://www.levinlaw.com/duPont-chemours-genx-lawsuit"](https://www.levinlaw.com/duPont-chemours-genx-lawsuit)] it is filing suit over the chemical.

But the legal strategy holds only limited promise. Though the class action suit over PFOA yielded a historic \$671 million settlement in February, it took more than a decade to litigate. By spinning off Chemours, DuPont, which Thursday was granted conditional approval to merge with Dow, has stanching its losses. And well before the case was decided DuPont had already begun using and emitting its replacement, GenX. EPA monitoring conducted from 2013 to 2016, which tested for just six of the thousands of PFAS compounds, showed that [[HYPERLINK "http://www.ewg.org/research/mapping-contamination-crisis"](http://www.ewg.org/research/mapping-contamination-crisis)] have contaminated drinking water. The government is not currently monitoring drinking water for these chemicals.

The lack of government oversight is what drove Jason Galloway, the student in Ohio, to do his own testing for GenX. Galloway isn't a chemist. He doesn't even know how to swim. Yet he took it upon himself to go out in a kayak to get samples of local water.

"I looked around and when I saw it hadn't been done, I knew the agencies who should have been doing it were either complicit or underfunded," said Galloway. "So I did it myself."

This article was reported in partnership with The Investigative Fund at The Nation Institute.